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Using Air Force Operational Priorities to Set Aircraft Availability Targets in DRIVE

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Executive Summary

USING AIR FORCE OPERATIONAL PRIORITIES TO SET AIRCRAFT AVAILABILITY TARGETS IN DRIVE

The Distribution and Repair In Variable Environments (DRIVE) program, which the Air Force Materiel Command has been developing for several years, was inspired by two observations:

- Long-term forecasting of spare part demand rates is not a precise process and probably never will be.
- A more responsive depot repair and distribution system can compensate for our shortcomings in forecasting spare part demands and thereby substantially improve the Air Force's ability to manage and control weapon system readiness.

Using the most recent information on assets, failures and weapon system availability targets, DRIVE sets priorities for repairing and distributing spare parts in a way that better meets the peacetime and wartime needs of Air Force units throughout the world. Those priorities are based on short-term projections of the benefits of repairing and distributing spare parts to particular Air Force bases. The benefits are determined by the increase in the probability of meeting peacetime and wartime availability goals (targets) balanced against the resources needed to make the repair. Two critical inputs to this process are the peacetime and wartime aircraft availability targets. This report addresses DRIVE's sensitivity to those targets and recommends what they should be so that the DRIVE results can be made consistent with an independent set of unit priorities established by Headquarters, U.S. Air Force, Operations Logistics (Ops/Log) Working Group.

As DRIVE was being developed, the Ops/Log Working group (consisting of representatives of the operations and logistics community) developed a method for setting priorities for the allocation of logistics resources to units based on the criticality of the unit's wartime mission. Currently, the Air Force has no systematic mechanism for reflecting these Ops/Log priorities in DRIVE; DRIVE uses a

peacetime availability target of 100 percent for all units and a wartime availability target of 85 percent *for every unit with a wartime mission.*

We recommend two actions that will improve DRIVE's ability to reflect Air Force priorities in its allocation process:

First, DRIVE baseline aircraft availability targets should remain at 100 percent for all units for peacetime and at an average *of 85 percent for the wartime surge period for all units with a wartime mission.* This combination of targets provides a good relative support mix between Air Force units with peacetime and wartime missions and those with only peacetime missions. During a period of crisis or actual conflict, DRIVE can still quickly provide additional support to engaged units by increasing their wartime surge goals to 100 percent.

Second, the Air Force should adjust, on a unit-by-unit basis, the wartime surge aircraft availability targets according to the Ops/Log priority matrix scheme consistent with an average wartime surge goal of 85 percent. Air Force units with a higher probability of being engaged in a conflict should be maintained with a higher level of aircraft availability. We recommend the use of 81, 85, 89 percent availability for units with, respectively, low, medium and high probabilities of being engaged. Doing so will yield an average availability of 85 percent, better reflect the Ops/Log priorities, and not seriously impact the availability of lower priority units. Major commands will retain the ability to adjust individual unit priorities at their discretion so long as the average availability targets for all units across each command is within the 85 percent target. All of those adjustments can be made easily using the DRIVE "scenario subsystem."

CONTENTS

TABLES

CHAPTER 1

INTRODUCTION

The distribution and repair in a variable environment (DRIVE) program is being implemented by the Air Force Materiel Command (AFMC) to improve the scheduling of depot-level repair and distribution of spare parts. Originally developed by the RAND Corporation, DRIVE uses statistical methods to optimize depot repair and distribution actions based on readiness and sustainability objectives. The optimization is a function of balancing the improved probability of meeting aircraft availability goals by having a serviceable spare part, against the depletion of resources needed to repair that spare. DRIVE also identifies the Air Force base having the greatest need for the repaired spare.

The depot repair and distribution optimization is driven by two aircraft availability targets provided for each base in the "model scenario file": the peacetime target and the wartime surge target.[1] Peacetime availability targets are currently set at 100 percent, and wartime surge goals are set at 85 percent availability for all units. The time horizon for DRIVE's optimization results in assessing day 30 of a war. The desired availability for deployable units on that day is represented by the wartime surge target. The choice of an 85 percent wartime surge goal results from research conducted by AFMC. At the direction of the Air Staff, additional research regarding aircraft availability target setting was requested. Specifically, LMI was tasked to do the following:

- Validate that the 85 percent wartime and the 100 percent peacetime availability targets provide the best support mix.
- Analyze DRIVE's responsiveness when targets are raised for deployed units

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[1]The DRIVE model inputs also include a third target for a sustainability period (i.e., when a unit is already engaged in a conflict). We are interested here in the DRIVE program's use during peacetime operations to provide Air Force unit readiness at the start of a military conflict. We do not address this third target, which is not currently functional. Furthermore, the current war concept of operations calls for all engaged units to have 100 percent .

- Determine the appropriate targets for units on the basis of Air Force operational priorities [i.e., the Operations Logistics (Ops/Log) Priority Matrix].

Since the conceptual development of DRIVE, the Headquarters, U.S. Air Force, Ops/Log Working Group, consisting of representatives of the operations and logistics community, has developed a method for prioritizing the allocation of logistics resources at the unit level, on the basis of the criticality of the unit's wartime mission. That prioritization scheme, which is known as the Ops/Log Priority Matrix, is the basis for our proposed wartime aircraft availability targets.

This report discusses (1) the algorithms used in DRIVE (a brief background focusing on availability target issues); (2) aircraft availability targets in DRIVE; (3) how target adjustments affect unit support during a contingency; (4) validation of the baseline targets; and (5) adjusting targets to reflect Air Force operational priorities.

CHAPTER 2

HOW DRIVE WORKS

OVERVIEW

To illustrate the DRIVE concept, we look at a simplified version of the situation DRIVE supported at Ogden Air Logistics Center (ALC). The Air Force has several squadrons of F-16 aircraft stationed at various locations. Some of those units have wartime missions and some have only peacetime training missions with no wartime taskings. All units have peacetime operating stocks of spares to support their activities. Units with a wartime mission also have an additional stock of mobility readiness spares packages/in place readiness spares packages (MRSP/IRSP) spares to support 30 days of self-sufficient (i.e., no resupply) wartime flying. DRIVE addresses the question: Given a particular shop with the capability to repair a number of different items and with a limited capacity, how much of each item should that shop *induct to repair in the next* bi-weekly (actually 15-day) production period?[1]

To answer this repair induction question, DRIVE projects the effect of each possible repair on the probability of mission accomplishment at each of the F-16 units a planning horizon into the future. A planning horizon for a wartime-tasked unit consists of the production period, plus shipping time, plus 30 days of wartime activity. For a unit with peacetime tasking only, the horizon omits the 30 days of wartime activity. DRIVE prioritizes repair inductions and distribution to optimize the probability of mission accomplishment by the end of the planning horizon. DRIVE generates a repair list whose first recommended repair induction is the one that would cause the largest increase in the probability of mission accomplishment[2] at some unit-per-repair capacity (e.g., labor hours) expended. That repair list shows prospective parts repairs in descending order of benefit, by cost.

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[1]In the distribution mode, DRIVE answers a similar question: Given a certain number of serviceable assets of a particular component, to which unit should I send them? The algorithms for DRIVE in repair mode are easily simplified to address this question, as well. The remainder of this discussion focuses on DRIVE in repair mode. With certain obvious modifications, it can be applied to distribution.

[2]For technical reasons, the ranking is actuallv in terms of the logarithm of the increase.

Ideally, one could simply continue down the repair list, keeping track of labor hours expended, until the shop's capacity was exhausted. The items on the list that are above that exhaustion point would constitute the solution to the questions posed on page 2-1. In fact, other considerations prevent the solution from being so straightforward. The availability of unserviceable carcasses to be inducted, the repair parts needed, the desirability of batching, demands from other sources, and other factors must be considered to develop a true induction schedule. DRIVE develops priorities, not schedules.

To see how DRIVE estimates the probable effect of each repair, consider the simple example of a 24-primary aircraft authorized (PAA) squadron of F-16Cs. For simplicity, we consider only line replaceable units (LRUs), items that are removed from aircraft on the flightline when they fail and are returned to base or to a depot for repair. [DRIVE also considers the effect of shop replaceable units, which are used in the repair of LRUs; we will not address that issue here.]

THE DRIVE ALGORITHM COMPUTATIONS

At an Air Force base, consider a specific LRU_i with s_i serviceable spare parts, both peacetime operating stocks (POS), and war reserve materiels. Included in that total are spare parts in transit to the base and those undergoing base repair, as well as spare parts ready for issue. (Those in transit and undergoing base repair will be available for use by the end of the production and shipping period.) A negative value indicates backorders.

Let N_i denote the expected number of not reparable this station (NRTS) failures (i.e., failures that must be sent to the depot for repair) over the forecasted horizon of the production period and shipping time (plus 30 days if the unit has a wartime tasking). Over the horizon, N_i is a function of the LRU's demand rate and the flying-hour program. The actual number of NRTS failures (x_i) over the planning horizon is a random variable, assumed Poisson, with mean N_i.

Air Force policy for sizing MRSP/IRSP specifies a required number of aircraft available through the first 30 days of war, based on the minimum number required to meet an 85 percent aircraft availability rate on day 30 of the war. If the F-16C has

n LRUs, for LRU_i, i equals 1, 2 . . . n, then the confidence level of meeting that goal (i.e., the probability of six or fewer aircraft down on day 30) is given by

$$P = \prod_i p(i, 0, 0) . \qquad \text{[Eq. 2-1]}$$

where p(i, 6, 30) is the probability of six or fewer aircraft down for LRU_i on day 30, assuming complete cannibalization (backorders are consolidated on as few aircraft as possible). If QPA_i is the quantity per aircraft of LRU_i, then the individual probabilities ("prob") are given in turn by

$$p(i, 6, 30) = prob\left(x_i - s_i \le 6 \times QPA_i \right) . \qquad \text{[Eq. 2-2]}$$

The equation assumes that DRIVE does not induce repair and/or shipment of any serviceable spare parts of LRU_i to the unit by the end of the production period. If we let $B0_i$ designate the number of backorders for LRU_i, a more familiar expression for p(i, 6, 30) is simply prob($B0_i \le 6 \times QPA_i$), since $x_i - s_i$ (if positive) is the number of backorders or holes on aircraft for LRU_i.

The situation for a unit with peacetime tasks is similar, but with two distinctions. The failures, x_i, of LRU_i are driven by peacetime flying activity during the production period and shipping time only. For a war-tasked unit, which must operate without depot resupply for 30 days after the shipping time, DRIVE must ensure that support for this period is provided. A peacetime unit only needs to be supported to the end of the shipping period. The second distinction, which is discussed in detail later, is that there are no officially established peacetime, full cannibalization, aircraft-availability targets. DRIVE now uses peacetime targets of 100 percent (i.e., 24 out of 24 aircraft available at all times). For a peacetime unit, DRIVE attempts to maximize the probability of *no* aircraft down (at any point in time). Thus, the target probability is given by

$$P = \prod_i p(i, 0, 0) . \qquad \text{[Eq. 2-3]}$$

Where, p(i, 0, 0) = prob($s_i - x_i \ge 0$) (this assumes that DRIVE does not induce shipment of any spare parts to the unit).

The key question is: How does DRIVE forecast what to repair and where to ship the spare part? Suppose the shop repairs a unit of LRU_j and ships it to a unit whose confidence level is

$$P = \prod_i p\left(s_i, 6, 30 \right) . \qquad \text{[Eq. 2-4]}$$

The contribution of LRU_i to the product changes from $p(s_j, 6, 30)$ to $p(s_j + 1, 6, 30)$, and if we let C' be the new confidence level,

$$\frac{C'}{C} = \frac{p\left(s_j + 1, 6, 30 \right)}{p\left(s_j, 6, 30 \right)} . \qquad \text{[Eq. 2-5]}$$

The factor, $C'/C = F(s_j + 1)$, which we will call the "improvement factor" for the s_j + 1st spare of LRU_j, measures the improvement in confidence level due to repairing and shipping a spare of LRU_j to the unit. The improvement factor depends only on LRU_j and not on other LRUs or activities in other repair shops. Thus, we can look at the benefit per unit cost of this action, measuring unit cost in repair hours, and compare it with the benefit per cost of other options – shipping the same LRU to another unit, repairing a different LRU for yet another unit, and so on.

The DRIVE system then ranks possible repairs in decreasing order of benefit (the natural log of the improvement factor) per repair hour.[3] Within a particular shop, repairing the items on the list until shop capacity is exhausted[4] maximizes the probability that all units will reach their target available aircraft by the end of the support period – relative to that shop's capability and capacity, the items it repairs, and the hours of work it can perform.

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[3]For proof that this actually maximizes the confidence level, see T. J. O'Malley, *The Aircraft Availability Model: Conceptual Framework and Mathematics*, Appendix C, LMI Report AF201, June 1983. The proof in that discussion actually concerns aircraft availability, but it is directly applicable to confidence level.

[4]The repairs do not need to be performed in the exact order as they appear on the list, because batching during the production period is permitted. As long as the work performed corresponds to an initial segment of the ranked list, it is the optimal contribution that shop can make to the joint confidence level of all the units.

Note that DRIVE does not consider unit priorities; units with the same target available aircraft will be treated identically by DRIVE, other things being equal. DRIVE does not distinguish between units that are expected to fight in place and be engaged immediately at the onset of military hostilities and units that will be deployed later as backup. The aircraft availability target is the only "control knob" DRIVE possesses. In fact, the target only determines the level of support that DRIVE tries to induce; the level attained is determined by repair capacity. We will revisit these observations when we discuss the use of targets and priorities that DRIVE contemplates.

CHAPTER 3

THE USE OF PEACETIME AIRCRAFT AVAILABILITY TARGETS IN DRIVE

When the Aircraft Availability Model (AAM) [developed by Logistics Management Institute (LMI) for the Air Force] was incorporated into the D041 Recoverable Consumption Item Requirements System, the Air Force began computing requirements for POS of aircraft reparable spares to meet explicit peacetime readiness objectives. Those objectives are presented in terms of aircraft availability rates – in concept similar to the measure used by DRIVE but with some significant differences. The largest difference is the forecast horizon of the two models. In its application for budgeting and procurement, the AAM must forecast at least one procurement leadtime ahead, on the order of 2 or 3 years for a typical component. Considering the leadtime required for the budget's formation and adoption, it is clear that the AAM is quite different from the DRIVE model with its short-term "now we have the spare parts, what's the best way to use them" orientation. A large technical difference between the two models is that the computation of peacetime availability rates in the AAM does not explicitly allow for cannibalization as does the DRIVE computation. In addition, the AAM is a worldwide steady-state model, which contrasts with DRIVE's unit-level focus on the dynamic wartime scenario.

As reflected in its prototype at Ogden ALC in support of the F-16, DRIVE is totally oriented toward wartime sustainability. Air Force units with MRSP/IRSP are supported solely on the basis of their available aircraft targets on day 30 of their wartime tasking; there is no provision for peacetime readiness targets at all. The presumption is that if a unit can fly 30 days of wartime mission, it can maintain acceptable levels of peacetime readiness in the period preceding the start of the war.

Units with no wartime tasking are given a peacetime aircraft availability target of 100 percent projected to the end of the production period plus an order-and-ship time. This fact does not reflect an official Air Force goal of 100 percent peacetime aircraft availability; the 100 percent goal was arrived at pragmatically to ensure acceptable support to such units. Because those units have only a short

forecast horizon of peacetime activity compared with units with the same peacetime activity plus 30 days of wartime flying, DRIVE projects more failures and a greater need for spares for MRSP/IRSP units (all else being equal). Experience with the DRIVE prototype at Ogden showed that the use of lower targets (less than 100 percent) for units with no wartime tasks tended to leave them with unacceptably low levels of support.

Thus, peacetime aircraft availability targets play a limited role in DRIVE. The 100 percent peacetime targets only balance support between units with and units without wartime tasking.[1] Using prescribed Air Force peacetime availability targets in DRIVE, as in the AAM, would reduce the support to units having no wartime tasking (because the targets are less than 100 percent), but it would have little effect on the calculation for other units. Presumably, there would be an indirect effect when spare parts migrate to MRSP/IRSP units. Aircraft with lower peacetime availability targets would have more spare part migration to MRSP/IRSP units than those with higher availability targets.

To summarize, peacetime availability targets do not have the same function in DRIVE as they do in the AAM. We recommend that in DRIVE's present form, peacetime availability targets remain 100 percent for all units.

At the same time, we believe that the issue of how well DRIVE supports peacetime operations through projected wartime sustainability deserves more examination than it has received (see Chapter 4). AFMC personnel have shown interest in this issue, particularly in light of the recent stock funding of depot-level reparables. The entire concept of stock funding emphasizes financial efficiencies in managing a revolving fund to support peacetime operations. Some have even called for a "peacetime DRIVE" that would presumably have the objective of maximizing peacetime readiness at the end of the production and order and shipment periods, while treating paybacks to MRSP/IRSP as priority additive requirements. Peacetime availability targets, suitably considering peacetime cannibalization practices and desirability, would be appropriate for such a model. However, we believe, that this type of model would go too far in the direction of peacetime efficiencies in reaction to DRIVE's perceived overemphasis on wartime sustainability.

[1]Even for units with wartime tasking, the peacetime aircraft availability target is used as a check in the item computation.

CHAPTER 4

COMPARISON OF ALTERNATIVE WARTIME SURGE AVAILABILITY TARGETS IN DRIVE

Analysis by AFMC determined that aircraft availability targets of 100 percent for peacetime and 85 percent for the wartime surge period are reasonable. The Air Staff hypothesized that a pair of lower targets might achieve comparable availability and more flexibility. For example, if the targets were in the 50 percent to 60 percent range, there would be room (above and below) to adjust Air Force unit targets to reflect the gradations of higher and lower priority; 100/85 appear to offer little room for prioritization. Changing the DRIVE targets does not change the total number of available spare parts. Whatever the targets, DRIVE induces distribution of all available spare parts and recommends ongoing repair until shop capacity constraints are reached. Thus, lowering DRIVE targets does not automatically degrade support to the units, nor does raising targets automatically improve support. Rather, the target changes result in different repair priorities and distribution recommendations. The issue to be addressed here is whether using alternative targets results in comparable, better, or worse surge readiness than achieved by using baseline targets (i.e., 100/85 percent).

We compare the effects of a range of targets to the standard 100/85 percent targets. Our data base consists of 41 F-16 avionics LRUs and 40 bases (i.e., the Ogden prototype DRIVE data base – 8 of the bases had no wartime mission.) The DRIVE model processed six 15-day periods; it did not redistribute spare parts, and the repair was "carcass-constrained." Table 4-1 highlights the differences in availabilities and expected not mission capable-supply (ENMCS) values for various peacetime/wartime availability goals. The first row shows overall aircraft availability during peacetime and the second row shows wartime. The third and fourth rows show the overall ENMCS aircraft during peacetime and wartime.

TABLE 4-1

DRIVE AIRCRAFT AVAILABILITY GOAL DIFFERENCES

Availability	Aircraft availability goals [for peacetime/wartime (percentage)]						
	100/85	60/50	80/50	90/50	80/60	80/70	91/68
Peacetime availability (percent)	90.6	87.9	88.4	89.1	88.5	88.6	89.2
Wartime availability (percent)	68.0	67.2	66.7	66.2	66.9	67.7	67.2
Peacetime ENMCS	146	186	179	168	178	176	167
Wartime ENMCS	406	416	421	428	419	410	415

The table indicates that the baseline 100/85 targets result in better total aircraft availability. These targets result in actual aircraft availabilities of 68 percent during wartime and 91 percent during peacetime. Note that ENMCS values using lower availability targets were progressively higher. This analysis was also validated on a larger data set. The results were similar and appear in detail in Appendix A.

While it still may be possible to achieve comparable aircraft availability and ENMCS with another pair of targets (other than those investigated here) the 100/85 percent targets provide good overall performance. This is not surprising. The targets issue received a great deal of attention during the development of DRIVE and, as mentioned, the 100/85 percent goals were chosen precisely because they provide a good mix of availability rates. Although some of the other pairs of targets come close to achieving the performance of the 100/85 targets, it does not seem wise to sacrifice performance for perceived flexibility by changing the targets. This is especially true since the analysis in Chapter 5 about DRIVE's responsiveness during contingency operations shows that it can quickly improve deployed Air Force unit availability using the 100/85 percent targets as a baseline.

CHAPTER 5

DRIVE RESPONSIVENESS DURING CONTINGENCY OPERATIONS

An early draft of the DRIVE contingency concept of operations (CONOPS) proposed the use of Joint Chiefs of Staff (JCS) project codes for deployed and/or engaged units requiring priority support. That proposal was made for two reasons: (1) a belief that DRIVE would not be responsive enough, even if it could properly portray the contingency support scenario and the use of increased availability targets, and (2) the belief that, as in Desert Storm, the JCS would assign such project codes to ensure priority support of other commodities. In this chapter we investigate the first belief: can the pure DRIVE model raise the aircraft availability rate of deployed units quickly enough by adjusting aircraft availability targets?

The current peacetime and wartime availability targets for DRIVE are 100 percent and 85 percent, respectively. We investigated whether raising the wartime targets of selected bases to 100 percent achieved the "desired" results. For our analysis, we processed the DRIVE model for two 15-day periods, did not allow spare part redistribution, and repair was carcass-constrained. Available carcasses were assumed to be equal to 90 days' worth of NRTS demands. We then chose five bases with varying numbers of aircraft and raised their wartime availability targets to 100 percent. Table 5-1 compares the ENMCS and base availability rate improvements.

The aircraft availability and ENMCS figures reflect the performance on day 30 of a war. The results show that within two 15-day periods, DRIVE's repair and distribution recommendations markedly improved the posture of the five bases. Using this approach also allows for retention of high peacetime availability at the eight bases with no wartime mission because their targets remain at 100 percent. This suggests that increasing the availability target to 100 percent is an acceptable wartime concept of operations. Table 5-2 compares the overall base availability rates and ENMCS on day 30. Bases with peacetime missions give up only two aircraft by raising the targets of the five bases with wartime missions. Most of the ENMCS increases occur at the other war bases; this is reasonable since they are not deployed.

TABLE 5-1

ENMCS AND AIRCRAFT AVAILABILITY COMPARISONS
FOR DAY 30 OF A WAR

Base	Total number aircraft	Availability rate		ENMCS	
		85 percent wartime target	100 percent wartime target	85 percent wartime target	100 percent wartime target
1	103	75.3	87.1	25.4	13.3
2	136	88.7	95.3	15.4	6.3
3	55	85.8	94.4	7.8	3.1
4	22	79.5	86.4	4.5	3.0
5	26	37.8	49.2	16.2	13.2

TABLE 5-2

OVERALL EFFECT ON AIR FORCE BASES – COMPARISON

(Five units deployed)

Air Force units	Availability rate		ENMCS	
	85 percent wartime target	100 percent wartime target	85 percent wartime target	100 percent wartime target
Bases with peacetime missions only (8)	93.4	92.7	19.0	21.0
Bases with wartime missions (5)	79.7	88.6	69.3	38.9
Nondeployed bases	63.6	60.5	337.0	364.9

DRIVE shows good ENMCS improvement in a 30-day period when five units are deployed. Next, we tested a 17-unit deployment. The results in Table 5-3 show that while DRIVE still improves the 17 war bases, it is not as significant as the five-base case. This is not surprising because 25 bases (17 with wartime missions and 8 with peacetime missions) now have a 100 percent availability target.

TABLE 5-3

OVERALL EFFECT ON AIR FORCE BASES

(Seventeen units deployed – no redistribution)

Air Force units	Availability rate		ENMCS	
	85 percent wartime target	100 percent wartime target	85 percent wartime target	100 percent wartime target
Bases with peacetime missions (8)	92.6	90.9	21.3	26.2
Bases with wartime missions (17)	71.5	76.2	253.2	193.7
Nondeployed bases	56.7	50.0	195.6	226.2

All the cases shown thus far assume no redistribution of spare parts. The results indicate unit performance if a crisis arose today. Once DRIVE has been in operation for about 1 year, redistribution will occur as a matter of routine daily operation. To examine how things might look in the future, we processed the 17-deployed-units case using DRIVE with redistribution. The results in Table 5-4 show that all cases result in higher availability and ENMCS values than the non-redistribution case. In addition, with redistribution, the improvement for the bases with wartime missions increases from 4.7 percent to 6.3 percent. This suggests that after DRIVE recommendations improve the distribution of spare parts through regular operations, it can do even better at handling the increased targets of selected units.

This analysis was limited to consideration of 41 F-16 avionics LRUs at 40 bases (the Ogden prototype DRIVE data base). Though the data are a representative sample, we later validated the results on a larger data set. Those are shown in Appendix A.

This analysis does not completely resolve the issue of whether the CONOPS need to rely on using JCS project codes. Our analysis does indicate that adjustment of aircraft availability targets may be sufficient to ensure support to deployed units. The issue of JCS project codes still must be addressed. During a contingency, the JCS

TABLE 5-4

OVERALL EFFECT ON AIR FORCE BASES

(Seventeen units deployed – redistribution)

Air Force units	Availability rate		ENMCS	
	85 percent wartime target	100 percent wartime target	85 percent wartime target	100 percent wartime target
Bases with peacetime missions (8)	94.2	91.7	16.7	23.8
Bases with wartime missions (17)	74.5	80.8	212.6	156.6
Nondeployed bases	61.1	50.4	175.8	223.7

is likely to designate project codes for deployed units to guarantee priority support of *all* material, not just reparables. Further, the current DRIVE CONOPS calls for spare part distribution to be requisition constrained in the following manner:

- JCS coded requisitions;
- Requisitions affecting mission capability coded priority 1, 2, and 3; and
- All other requisitions.

It seems likely that this constrained use of DRIVE will ensure that JCS requisitions are honored first. However, LMI's DRIVE/UMMIPS study[1] suggests that a "pure" DRIVE constrained only by MICAPS would provide substantially better support during peacetime and wartime.

[1]LMI Report AF201R1. *A Comparison of Two Systems for Distributing Spare Parts.* Culosi, Salvatore J., and Eichorn, Frank L. March 1993.

CHAPTER 6

OPERATIONS PRIORITIES AND DRIVE TARGETS

DRIVE uses unit aircraft availability targets to optimize the distribution of repaired parts. Current wartime surge targets are set to 85 percent for all units. However, official Air Force war planning documents do not call for all units to engage in a conflict at the same time. The war plans detail several possible scenarios involving the deployment of different units to various locations. An examination of the war plans suggests that some units are much more likely to have war tasking than others. Air Force XOXW has taken this information and compiled the Ops/Log Priority Matrix scheme. It follows that because some units have a greater chance of being deployed in combat, they should be maintained at higher levels of readiness. As a result, DRIVE aircraft availability taigets should be adjusted accordingly.

The operational priorities scheme is based on the FY93 through FY95 *Joint Strategic Capabilities Plan (JSCP).* It prioritizes units based on their probability of going to war under various scenarios. "Swing" forces are forces that are tasked to go to more than one of the three contingencies. First contingency forces are forces tasked to deploy to the first contingency (i.e., conflict) to erupt in a multiple, concurrent, regional scenario. Double- and triple-swing tasking indicates these forces may be deployed to one of the two or three contingencies, respectively. Second contingency forces are forces tasked to deploy to the second major contingency to erupt in the multiple concurrent, regional scenario. Since the second contingency may also be in any of the three regional areas, a unit could be tasked as a second-go unit for all three – thus, the terms double- and triple-swing forces to the second contingency.

Units that are tasked to operate in all major theaters have the highest priority for resources; units that are tasked to operate only in a single theater have the lowest

priority. Additionally, major regional areas have precedence over lesser regional areas (as defined by the war plans). The following are the seven categories of unit tasking:

(1) Triple-swing forces deployed to the first contingency

(2) In-place forces

(3) Double-swing forces deployed to the first contingency

(4) Theater-only forces deployed only to one theater

(5) Triple-swing forces deployed to the second contingency

(6) Double-swing forces deployed to the second contingency

(7) Single-swing forces.

Each unit is categorized by one of the tasking categories. Aircraft availability targets in DRIVE are assigned to tasking categories as follows: (1) and (2) 89 percent, (3) and (4) 85 percent, and (5) through (7) 81 percent. Three groups were chosen to provide additional support to the highly critical units without the degradation of support that might result with a spread among all seven categories. The 4 percent (i.e., 85 percent versus 81 percent) spread was chosen because it represents one aircraft from a typical 24-PAA unit. Also, DRIVE uses integers for calculating required mission-capable aircraft; therefore, a smaller percentage spread would have little, if any, effect.

To evaluate the performance of the three targets and how they would affect support to various bases, the DRIVE "scenario file" was adjusted to reflect the operational priorities. We used a DRIVE data base consisting of items belonging to the F-15, F-16, and C-130 exclusively. We evaluated DRIVE's distribution recommendation of repaired items that had actually been shipped during a 270-day period. This was done by "giving back" those shipped items as depot assets. Those spare parts were then redistributed according to DRIVE's recommendations. Table 6-1 compares the total wartime ENMCS aircraft for the three weapon systems using the standard targets and the operational priority targets.

TABLE 6-1

PROJECTED WARTIME ENMCS COMPARISONS

Target type	Aircraft type			
	F-15	F-16	C-130	Total
Standard	70.02	197.75	21.91	289.68
Operations priority	71.01	196.21	21.86	289.08

The results indicate that F-16 and C-130 aircraft units achieve slightly lower ENMCS than F-15 aircraft units. However, Table 6-2 shows that in aggregate, the aircraft availability goals did not change significantly. To get a better picture of the impact, we need to examine individual bases.

TABLE 6-2

CHANGES IN AVAILABILITY BY MISSION DESIGN

Target type	Aircraft type		
	F-15 (percentages)	F-16 (percentages)	C-130 (percentages)
Standard	85	85	85
Operations priority	84	84	85

Table 6-3 shows some examples of bases that have significant differences in the number of ENMCS aircraft. Complete results showing ENMCS and availability changes for all bases' stock record account numbers (SRANs) are in Appendix B.

The unit aircraft availability targets at the first base were all 81 percent as a result of incorporating the operational priority targets. The aircraft availability targets at the second base were all 89 percent. Clearly, DRIVE responds to these relative differences and recommends distribution of spare parts accordingly at the third base units' target, two units' new aircraft availability target became 81 percent and two became 89 percent. This results in an overall effective goal of 85 percent. As one might expect, the support level remains the same.

TABLE 6-3

CHANGES IN AVAILABILITY BY SRAN

SRAN	Standard targets		Operations targets		Change
	Peacetime/ wartime (percentages)	ENMCS	Peacetime/ wartime (percentages)	ENMCS	
Base 1	100/85	2.88	100/81	3.64	−0.76
Base 2	100/85	17.02	100/89	15.89	1.13
Base 3	100/85	1.00	100/85[a]	1.00	0.00

[a] This base has four units: two with an 81 percent goal and two with an 89 percent goal.

Though the ENMCS deltas are small, Tables 6-1, 6-2, and 6-3 show that DRIVE's support does respond to the relative difference in unit availability goals. The primary reason for the small differences is the already high unit availabilities. The current spare part posture at most bases is large enough so that the expected number of aircraft available during wartime is higher than the 85 percent goal.

The overall effects on each major command MAJCOM of using the new targets are small, as shown in Table 6-4. The ENMCS for the standard targets and those for the adjusted targets indicate that the Pacific Air Force (PAF) and the Mobility Command (MOB) have more high-priority units than the other MAJCOMs. But while PAF and MOB are receiving some extra support, support to the other MAJCOMs is not being severely degraded.

While the 81/85/89 percentages provide a set of targets that reasonably reflect operational priorities, the MAJCOMs must retain the final authority to determine support to units under their command. However, unilateral decisions should not be allowed to cause diversion of spare parts from other commands. To ensure this, MAJCOMs will be allowed to change targets as desired as long as the overall MAJCOM average target availability rate remains unchanged. Thus, an F-15 squadron having a 24 PAA could have its availability targets increased by two points, if another 24-PAA squadron aircraft availability target was decreased by two points (or two such squadrons were each decreased by one point). This procedure

TABLE 6-4

CHANGES IN ENMCS BY MAJCOM

MAJCOM	Resulting ENMCS	
	Standard targets	Adjusted targets
U.S. Air Force in Europe	10.14	10.40
Air Force Reserve	19.94	20.01
Air National Guard	133.30	133.20
Air Training Command	0.00	0.00
Air Combat Command	49.05	49.19
Air Mobility Command	38.74	37.72
Pacific Air Force	24.13	23.69
Special Operations Command	8.60	9.09
Air Force Materiel Command	5.77	5.80

allows the MAJCOMs the flexibility they require during peacetime operations. (In case of actual military conflict, engaged units will have targets increased to 100 percent as discussed in the DRIVE CONOPS.)

Since the use of operational priorities makes sense and since DRIVE is sensitive to relative differences among base targets, those priorities should become part of the DRIVE standard data system. The implementation is straightforward: AF/XOXW would develop the priority listing and provide this classified information to the MAJCOMs. The MAJCOMs can modify the unit-level goals as desired, subject to the constraint described in the paragraph above. A small PC-based spreadsheet model could ensure that the MAJCOMs' adjusted aircraft availability targets add up to the baseline target for each MD. These changes are then input in the DRIVE program through the "scenario subsystem." In addition, the baseline scenario file should be changed so that the default aircraft availability target is set to 81 percent, ensuring that the MAJCOMs adjust it.

This plan for setting targets relies implicitly on DRIVE's current concept of operations. Under that concept, the item manager uses the ranked DRIVE lists to prioritize requisitions. Those requisitions reflect spare parts levels determined by

Air Force requirements systems, for both wartime spares and peacetime stocks at bases.

The DRIVE algorithms and objective functions are similar, but not identical to those used in Weapon System Management Information System, Requirements Execution Availability Logistics Module (WSMIS/REALM) to compute wartime kit requirements. The WSMIS/REALM requirements are added to each base's peacetime operating stock level (including any special levels) to give the base's overall level or requisitioning objective (RO). When stock on-hand plus on-order (counting backorders as negative stock on-hand) drop below the RO, the base requisitions a unit from depot supply. While the proposed DRIVE targets do not correspond exactly to targets [direct support objectives (DSOs)] used in WSMIS/REALM, the linkage with the requisitioning system provides DRIVE operations with a measure of consistency with the spares requirements determination process. If the concept of operations changes in the future (e.g., to a "push" system that ignores requisitions as some have suggested), that linkage would be removed. In such a case, the relationship of DRIVE targets to DSOs would warrant re-examination.

CHAPTER 7

RECOMMENDATIONS

We make two recommendations that are designed to refine DRIVE's ability to reflect Air Force priorities regarding the development of aircraft repair and item distribution policies.

First, DRIVE baseline aircraft availability targets should remain at 100 percent for peacetime and at 85 percent for the wartime surge period. This combination of targets provides a good relative support mix between Air Force bases with peacetime and wartime missions and those having only peacetime missions. Additionally, using these relative targets, DRIVE can still quickly provide additional support to engaged units during times of conflict by increasing the wartime surge goal to 100 percent. This approach is recommended in the *Draft DRIVE Contingency Concept of Operations*.

Second, the Air Force should adjust the wartime surge aircraft availability targets according to the Ops/Log Priority Matrix scheme (described in Chapter 6). It is clear that Air Force units with a higher probability of being engaged in a conflict should be maintained with a higher level of aircraft availability. Using the 81/85/89 percentages scheme provides that additional support at a reasonable level. By MAJCOM, the impact on aircraft availability is insignificant. Additionally, the MAJCOMs will retain a discretionary ability to adjust individual unit priorities. All of those adjustments can be easily accomplished using the DRIVE "scenario subsystem."

APPENDIX A

VALIDATION OF EARLIER ANALYSIS ON DRIVE AIRCRAFT AVAILABILITY TARGETS

VALIDATION OF EARLIER ANALYSIS ON DRIVE AIRCRAFT AVAILABILITY TARGETS

In May 1992, Logistics Management Institute (LMI) was asked to examine the effects of using alternative aircraft availability targets for the distribution and repair in a variable environment model (DRIVE). The hypothesis was that lower targets might perform as well but allow more flexibility for raising the targets of deployed units. LMI analyzed various targets using the F-16 Ogden Air Logistics Center data base. We determined that the 100 percent peacetime and 85 percent wartime targets performed better than lower alternative targets. Since that time, LMI has set up a DRIVE testbed with the current version of the DRIVE model and a subset of the latest data. The subset includes all of the F-15-, F-16-, and C-130-specific items worldwide. Using this new testbed and expanded data base, LMI validated the earlier results (see Chapter 5).

The direct approach to validating the earlier findings is to process the new data with the new model using the alternative targets from the earlier study and examine the effects. If the performance measures react similarly, the study can be said to be validated. To this end, LMI ran the model with one set of aircraft availability targets from each end of the spectrum. Table A-1 summarizes the results and compares them against the current 100/85 percent targets.

TABLE A-1

PURE DRIVE TARGET RESULTS

Availability	Aircraft availability targets for peacetime/wartime (percentage)		
	100/85	80/50	91/68
Peacetime ENMCS	404.48	406.70	404.24
Wartime ENMCS	446.54	450.22	442.43

The 91/68 targets were chosen during the original study because they were the resulting availabilities from the 100/85 model runs. The model was run for a 270-day period. The spare parts actually distributed during the preceding 270 days (starting from 31 July 1992) were subtracted from the bases and redistributed by DRIVE under the different scenarios. Clearly, the 80/50 targets do not perform as well. The 91/68 targets show a slight improvement, but they are not significant enough to warrant a call for changing the official targets.

APPENDIX B

DETAILED STOCK RECORD ACCOUNT NUMBER RESULTS

DETAILED STOCK RECORD ACCOUNT NUMBER RESULTS

TABLE B-1

DETAILED SRAN VALUES

SRAN	PAA	ST_ DSO	NW_ DSO	ST_ ESP	NW_ ESP	DELTA_ P	SDAVP	NWAVP	DLTA_ PR
FB2027	128	108.8	106.4	4.86	4.89	-0.03	0.96	0.96	0.00
FB2037	27	22.95	22.83	1.78	1.78	0.00	0.93	0.93	0.00
FB2040	6	5.10	4.86	0.00	0.00	0.00	1.00	1.00	0.00
FB2067	28	23.80	23.80	0.00	0.00	0.00	1.00	1.00	0.00
FB2300	47	39.95	38.79	1.73	1.72	0.01	0.96	0.96	0.00
FB2500	32	27.20	27.20	1.01	1.01	0.00	0.97	0.97	0.00
FB2805	99	84.15	80.35	4.04	4.08	-0.04	0.96	0.96	0.00
FB2823	143	121.6	121.3	5.81	6.30	-0.49	0.96	0.96	0.00
FB3010	30	25.50	25.10	0.45	0.45	0.00	0.99	0.96	0.00
FB3067	36	30.60	29.56	0.00	0.00	0.00	1.00	1.00	0.00
FB3300	8	6.80	6.80	0.21	0.21	0.00	0.97	0.97	0.00
FB4417	34	28.90	30.26	0.42	0.42	0.00	0.99	0.99	0.00
FB4419	34	28.90	27.54	0.00	0.00	0.00	1.00	1.00	0.00
FB4420	19	16.15	16.91	2.08	2.08	0.00	0.89	0.89	0.00
FB4425	1	0.85	0.81	0.00	0.00	0.00	1.00	1.00	0.00
FB4460	44	37.40	38.00	1.35	1.35	0.00	0.97	0.97	0.00
FB4469	16	13.60	12.96	0.20	0.20	0.00	0.99	0.99	0.00
FB4479	40	34.00	32.40	0.00	0.00	0.00	1.00	1.00	0.00
FB4488	48	40.80	40.92	0.63	0.63	0.00	0.99	0.99	0.00
FB4515	38	32.30	30.78	0.00	0.00	0.00	1.00	1.00	0.00
FB4528	39	33.15	32.23	0.00	0.00	0.00	1.00	1.00	0.00
FB4585	31	26.35	25.11	0.00	0.00	0.00	1.00	1.00	0.00
FB4600	25	21.25	20.25	0.00	0.00	0.00	1.00	1.00	0.00
FB4608	106	90.10	88.62	0.00	0.00	0.00	1.00	1.00	0.00
FB4615	28	23.80	22.68	0.00	0.00	0.00	1.00	1.00	0.00
FB4616	36	30.60	29.56	0.00	0.00	0.00	1.00	1.00	0.00
FB4620	46	39.10	39.34	0.00	0.00	0.00	1.00	1.00	0.00
FB4621	32	27.20	25.92	0.00	0.00	0.00	1.00	1.00	0.00
FB4626	24	20.40	20.72	0.00	0.00	0.00	1.00	1.00	0.00
FB4634	14	11.90	11.34	0.00	0.00	0.00	1.00	1.00	0.00
FB4654	61	51.85	50.13	0.00	0.00	0.00	1.00	1.00	0.00
FB4659	40	34.00	33.92	0.00	0.00	0.00	1.00	1.00	0.00
FB4661	70	59.50	57.22	1.05	1.05	0.00	0.99	0.99	0.00
FB4664	37	31.45	31.49	1.00	1.00	0.00	0.97	0.97	0.00

Note: SRAN = stock record account number (base); PAA = primary aircraft authorization; ST_DSO = the calculated direct support objective (DSO) using the 85 percent availability targets; NW_DSO = the calculated DSO using the operational priority targets; ST_ESP = resulting Expected Not Mission Capable Supply (ENMCS) using the 85 percent goal; NW_ESP = resulting ENMCS using the operational priority goal; DELTA_P = difference between the two ENMCS values; SDAVP = overall aircraft availability at the base using the 85 percent goal; NWAVP = overall aircraft availability at the base using the operational priority goal; and DLTA_PR = difference between the two aircraft availability targets.

TABLE B-1

DETAILED SRAN VALUES (Continued)

SRAN	PAA	ST_ DSO	NW_ DSO	ST_ ESP	NW_ ESP	DELTA_P	SDAVP	NWAVP	DLTA_ PR
FB4672	70	59.50	57.74	0.00	0.00	0.00	1.00	1.00	0.00
FB4678	33	28.05	26.73	0.00	0.00	0.00	1.00	1.00	0.00
FB4686	59	50.15	48.11	0.00	0.00	0.00	1.00	1.00	0.00
FB4689	65	55.25	53.61	1.94	1.95	-0.01	0.97	0.97	0.00
FB4690	63	53.55	51.07	0.00	0.00	0.00	1.00	1.00	0.00
FB4800	138	117.30	117.10	3.69	3.09	0.00	0.97	0.98	-0.01
FB4801	118	100.30	95.58	1.00	1.00	0.00	0.99	0.99	0.00
FB4803	150	127.50	126.80	7.01	6.98	0.03	0.95	0.95	0.00
FB4809	48	40.80	42.72	5.68	5.68	0.00	0.88	0.88	0.00
FB4812	62	52.70	50.22	0.00	0.00	0.00	1.00	1.00	0.00
FB4814	130	110.50	105.30	4.72	4.72	0.00	0.96	0.96	0.00
FB4819	132	112.20	106.90	2.88	3.64	-0.76	0.98	0.97	0.01
FB4820	8	6.80	6.48	0.35	0.34	0.01	0.96	0.96	0.00
FB4823	1	0.85	0.81	0.04	0.04	0.00	0.96	0.96	0.00
FB4829	114	96.90	96.90	5.46	5.50	-0.04	0.95	0.95	0.00
FB4830	132	112.20	110.40	5.28	5.28	0.00	0.96	0.96	0.00
FB4852	70	59.50	56.70	5.86	5.94	-0.08	0.92	0.92	0.00
FB4857	36	30.60	29.88	2.35	2.35	0.00	0.93	0.93	0.00
FB4877	44	37.40	36.44	0.26	0.26	0.00	0.99	0.99	0.00
FB4887	129	109.70	105.50	9.84	9.87	-0.03	0.92	0.92	0.00
FB4897	59	50.15	49.39	3.68	3.64	0.04	0.94	0.94	0.00
FB5000	98	83.30	80.90	3.52	3.55	-0.03	0.96	0.96	0.00
FB5004	58	49.30	48.82	3.16	3.17	-0.01	0.95	0.95	0.00
FB5205	96	81.60	83.28	17.02	15.89	1.13	0.82	0.83	-0.01
FB5209	23	19.55	20.07	1.07	1.07	0.00	0.95	0.95	0.00
FB5250	5	4.25	4.33	0.26	0.19	0.07	0.95	0.96	-0.01
FB5260	3	2.55	2.43	0.00	0.00	0.00	1.00	1.00	0.00
FB5270	162	137.70	136.90	14.68	14.65	0.03	0.91	0.91	0.00
FB5284	88	74.80	78.32	9.19	8.85	0.34	0.90	0.90	0.00
FB5294	62	52.70	54.86	4.26	4.25	0.01	0.93	0.93	0.00
FB5587	40	34.00	32.40	0.00	0.00	0.00	1.00	1.00	0.00
FB5606	47	39.95	39.95	3.11	3.37	-0.26	0.93	0.93	0.00
FB5612	53	45.05	45.25	4.48	4.50	-0.02	0.92	0.92	0.00
FB5621	36	30.60	30.60	3.85	3.85	0.00	0.89	0.89	0.00
FB5644	61	51.85	49.77	0.29	0.29	0.00	1.00	1.00	0.00
FB5688	16	13.60	12.96	3.18	3.18	0.00	0.80	0.80	0.00
FB6011	18	15.30	15.30	0.00	0.00	0.0	1.00	1.00	0.00
FB6012	18	15.30	15.30	6.20	6.23	-0.03	0.66	0.65	0.01
FB6021	10	8.50	8.50	0.00	0.00	0.0	1.00	1.00	0.00
FB6022	36	30.60	29.16	4.39	4.35	0.04	0.88	0.88	0.00
FB6031	8	6.80	6.48	0.23	0.23	0.00	0.97	0.97	0.00
FB6032	18	15.30	15.30	5.54	5.54	0.00	0.69	0.69	0.00
FB6041	10	8.50	8.30	0.21	0.21	0.00	0.98	0.98	0.00
FB6042	18	15.30	14.58	0.00	0.00	0.00	1.00	1.00	0.00
FB6043	16	13.60	13.60	0.38	0.38	0.00	0.98	0.98	0.00
FB6044	18	15.30	14.58	2.30	2.34	-0.04	0.87	0.87	0.00
FB6081	8	6.80	6.80	0.27	0.27	0.00	0.97	0.97	0.00
FB6091	18	15.30	14.58	2.44	2.44	0.00	0.86	0.86	0.00
FB6101	24	20.40	20.40	4.06	4.15	-0.09	0.83	0.83	0.00
FB6102	8	6.80	6.80	0.35	0.35	0.00	0.96	0.96	0.00
FB6121	10	8.50	8.50	0.00	0.00	0.00	1.00	1.00	0.00

TABLE B-1

DETAILED SRAN VALUES (Continued)

SRAN	PAA	ST_ DSO	NW_ DSO	ST_ ESP	NW_ ESP	DELTA_P	SDAVP	NWAVP	DLTA_ PR
FB6123	18	15.30	15.30	4.70	4.71	-0.01	0.74	0.74	0.00
FB6141	24	20.40	19.44	0.00	0.00	0.00	1.00	1.00	0.00
FB6151	48	40.80	38.88	3.95	3.97	-0.02	0.92	0.92	0.00
FB6152	10	8.50	8.50	0.00	0.00	0.00	1.00	1.00	0.00
FB6171	24	20.40	20.40	3.28	3.27	0.01	0.86	0.86	0.00
FB6181	10	8.50	8.10	0.00	0.00	0.00	1.00	1.00	0.00
FB6191	26	22.10	22.10	0.36	0.36	0.00	0.99	0.99	0.00
FB6202	18	15.30	14.58	2.23	2.23	0.00	0.88	0.88	0.00
FB6221	44	37.40	36.36	8.17	8.18	-0.01	0.81	0.81	0.00
FB6231	8	6.80	6.80	0.34	0.34	0.00	0.96	0.96	0.00
FB6232	18	15.30	14.58	2.37	2.37	0.00	0.87	0.87	0.00
FB6241	18	15.30	15.30	0.00	0.00	0.00	1.00	1.00	0.00
FB6251	18	15.30	15.30	7.13	7.13	0.00	0.60	0.60	0.00
FB6252	8	6.80	6.80	1.03	1.03	0.00	0.87	0.87	0.00
FB6261	18	15.30	14.58	13.89	13.89	0.00	0.23	0.23	0.00
FB6271	18	15.30	14.58	0.00	0.00	0.00	1.00	0.00	0.00
FB6281	18	15.30	15.30	0.00	0.00	0.00	1.00	1.00	0.00
FB6291	10	8.50	8.10	0.00	0.00	0.00	1.00	1.00	0.00
FB6302	10	8.50	8.50	0.00	0.00	0.00	1.00	1.00	0.00
FB6303	18	15.30	14.58	5.65	5.83	-0.18	0.69	0.68	0.01
FB6321	18	15.30	14.58	6.54	5.67	0.87	0.64	0.68	-0.04
FB6323	8	6.80	6.48	0.22	0.22	0.00	0.97	0.97	0.00
FB6324	18	15.30	14.58	5.93	5.76	0.17	0.67	0.68	-0.01
FB6325	10	8.50	8.50	0.16	0.16	0.00	0.98	0.98	0.00
FB6331	12	10.20	10.20	0.46	0.46	0.00	0.96	0.96	0.00
FB6341	18	15.30	14.58	6.49	6.68	-0.19	0.64	0.63	0.01
FB6353	8	6.80	6.80	0.19	0.19	0.00	0.98	0.98	0.00
FB6355	24	20.40	19.44	0.00	0.00	0.00	1.00	1.00	0.00
FB6356	42	35.70	34.02	0.02	0.02	0.00	1.00	1.00	0.00
FB6371	28	23.80	23.08	3.32	3.40	-0.08	0.88	0.88	0.00
FB6372	10	15.30	14.58	2.25	2.23	0.02	0.88	0.88	0.00
FB6381	10	8.50	8.50	0.00	0.00	0.00	1.00	1.00	0.00
FB6383	3	2.55	2.67	0.21	0.21	0.00	0.93	0.93	0.00
FB6391	8	6.80	6.80	0.18	0.18	0.00	0.98	0.98	0.00
FB6401	24	20.40	19.44	2.02	2.00	0.02	0.92	0.92	0.00
FB6421	16	13.60	12.96	0.41	0.41	0.00	0.97	0.97	0.00
FB6423	10	8.50	8.50	0.00	0.00	0.00	1.00	1.00	0.00
FB6431	8	6.80	6.80	0.38	0.38	0.00	0.95	0.95	0.00
FB6432	18	15.30	15.30	4.99	5.22	-0.23	0.72	0.71	0.01
FB6433	18	15.30	14.58	2.40	2.40	0.00	0.87	0.87	0.00
FB6441	10	8.50	8.10	0.00	0.00	0.00	1.00	1.00	0.00
FB6451	18	15.30	14.58	5.49	5.70	-0.21	0.69	0.68	0.01
FB6461	24	20.40	20.40	2.42	2.41	0.01	0.90	0.90	0.00
FB6471	10	8.50	8.50	0.00	0.00	0.00	1.00	1.00	0.00
FB6481	8	6.80	6.80	0.24	0.24	0.00	0.97	0.97	0.00
FB6482	12	10.20	10.20	0.35	0.35	0.00	0.97	0.97	0.00
FB6491	10	8.50	8.50	0.00	0.00	0.00	1.00	1.00	0.00
FB6501	8	6.80	6.48	0.21	0.21	0.00	0.97	0.97	0.00
FB6511	26	22.10	21.78	4.56	4.53	0.03	0.82	0.83	-0.01
FB6520	24	20.40	21.36	0.32	0.32	0.00	0.99	0.99	0.00

TABLE B-1

DETAILED SRAN VALUES (Continued)

SRAN	PAA	ST_ DSO	NW_ DSO	ST_ ESP	NW_ ESP	DELTA_P	SDAVP	NWAVP	DLTA_ PR
FB6521	8	6.80	7.12	0.00	0.00	0.00	1.00	1.00	0.00
FB6530	2	1.70	1.78	3.09	3.01	0.08	−0.55	−0.50	−0.05
FB6540	18	15.30	14.58	0.00	0.00	0.00	1.00	1.00	0.00
FB6562	8	6.80	6.80	1.02	1.02	0.00	0.87	0.87	0.00
FB6605	8	6.80	6.80	0.21	0.21	0.00	0.97	0.97	0.00
FB6618	8	6.80	6.80	0.19	0.19	0.00	0.98	0.98	0.00
FB6633	8	6.80	6.80	0.18	0.18	0.00	0.98	0.98	0.00
FB6637	8	6.80	6.80	0.26	0.26	0.00	0.97	0.97	0.00
FB6656	8	6.80	6.80	0.21	0.21	0.00	0.97	0.97	0.00
FB6670	8	6.80	6.80	0.20	0.20	0.00	0.97	0.97	0.00
FB6703	8	6.80	6.80	0.18	0.18	0.00	0.98	0.98	0.00
FB6712	8	6.80	6.80	0.21	0.21	0.00	0.97	0.97	0.00
FB6716	18	15.30	14.58	0.00	0.00	0.00	1.00	1.00	0.00

APPENDIX C

GLOSSARY

GLOSSARY

AAM	=	Aircraft Availability Model
AFMC	=	Air Force Materiel Command
ALC	=	Air Logistics Center
CONOPS	=	Concept of Operations
DRIVE	=	distribution and repair in a variable environment
DSOs	=	Direct Support Objectives
ENMCS	=	expected not mission capable supply
IRSP	=	in-place readiness spares packages
JCS	=	Joint Chiefs of Staff
JSCP	=	*Joint Strategic Capabilities Plan*
LRUs	=	line replaceable units
MAJCOMs	=	major commands
MD	=	mission design
MOB	=	Mobility Command
MRSP	=	mobility readiness spares packages
NRTS	=	not reparable this station
Ops/Log	=	Operations Logistics
PAA	=	primary aircraft authorization
PAF	=	Pacific Air Force
POS	=	peacetime operating stock
REALM	=	Requirements/Execution Availability Logistics Module
RO	=	requisitioning objective
SRANs	=	stock record account numbers

SRUs	=	shop replaceable units
USAF	=	U.S. Air Force
WSMIS	=	Weapon System Management Information System

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The Air Force Materiel Command has been developing the DRIVE program for several years. It was inspired by problems with forecasting long-term requirements for spares and the need for a more responsive depot repair and distribution system. DRIVE uses the most recent information about assets, failures, and weapon system availability targets to determine priorities for repair and distribution. Two critical inputs to this process are the peacetime and wartime aircraft availability targets. This report evaluates DRIVE's ability to shift support among bases by adjustment of their targets. It then examines how to set the targets to reflect unit operational priorities as set by the Headquarters, USAF Operations Logistics (Ops/Log) Working Group.

Two recommendations are made: First, DRIVE baseline aircraft availability targets should remain at 100 percent for all units for peacetime and at an average of 85 percent for the wartime surge period for all units with a wartime mission. Second, the Air Force should adjust, on a unit-by-unit basis, the wartime surge aircraft availability targets according to the Ops/Log priority matrix scheme consistent with an average wartime surge goal of 85 percent.

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